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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/775,214

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Shafiq Pirbhai

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EXAMINER

JAKOVAC, RYAN J

ART UNIT

PAPER NUMBER

2145

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DELIVERY MODE

08/28/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/775,214	<b>Applicant(s)</b> PIRBHAI ET AL.	
	<b>Examiner</b> RYAN J. JAKOVAC	<b>Art Unit</b> 2145	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 June 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                      |                                                                   |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____                                                          | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-14 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. 2004/0255028 to Chu et al (hereinafter Chu) in view of US 2002/0172207 to Saito et al (hereinafter Saito).

Regarding claims 1 and 18, Chu teaches a method of managing virtual routing forwarding (VRF) tables at a provider edge PE router of a L3 virtual private network (VPN) (Chu, paragraphs [0001], [0006-0008], VRF tables management in a VPN.), said PE router maintaining a VPN-IP master routing information base (RIB) and a sub-RIB for each said VRF table (Chu, paragraph [0004], The VRF table contains a list of all the customer sites connected to the same location (i.e. master RIB). Paragraph [0005], two separate sites containing the same characteristics (i.e. Sub-RIB) are assigned to the same routing table.), comprising the steps of:

maintaining an import route target (ImpRT) tree comprising all ImpRT attributes currently configured on said PE router (Chu, paragraph [0004], Routing tables are populated and stored within each PE router which contain routing information for all customer sites (i.e. all ImpRT attributes). Routes are populated in the VRF table.);

modifying an ImpRTi attribute of a VRFi table (Chu, paragraph [0108], Sites are deleted from access modules (i.e. VRF tables). Access modules are routing tables, see paragraph [0048]. Paragraph [0046], Routes are added to the VRF table of the PE router.));

searching said ImpRT tree for a match to said ImpRTi attribute to identify a VRFm table having said ImpRTi attribute (Chu, paragraph [0048], The PE router searches its VRF table to determine whether to add a route to the VRF table.).

Chu does not expressly disclose performing a route refresh operation only if a match is not found, however, Saito discloses performing a route refresh operation only if a match is not found (Saito, [0258-0269], upon receiving a registration request message, the router checks whether the address exists in the paging and routing cache to see whether there is address duplication (i.e. if a match is found). If there is no address duplication (i.e. a match is not found), the router transmits a registration acknowledgement message (i.e. performs a route refresh operation).).

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to combine performing a route refresh operation only if a match is not found as taught by Saito with the method of Chu in order to provide routing functionality for mobile nodes such as registration and providing acknowledgement of registration (Saito, [0258-0269].).

Chu teaches updating said VRF<sub>i</sub> table accordingly (Chu, paragraph [0048], The PE router searches its VRF table to determine whether to add a route to the VRF table.).

Regarding claim 2, the combination of Chu and Saito teaches the method of claim 1, wherein said ImpRT tree maintains a list of all ImpRT attributes at a PE node, each ImpRT attribute being associated with all VRF tables that are currently configured with said ImpRT attribute (Chu, paragraph [0004], Routing tables are stored within each PE router which contain routing information for all customer sites (i.e. all ImpRT attributes).).

Regarding claim 3, the combination of Chu and Saito teaches the method of claim 1, wherein said step of modifying comprises adding said ImpRT<sub>i</sub> attribute to said VRF<sub>i</sub> table (Chu, paragraph [0048], Routes (i.e. ImpRT<sub>i</sub> attributes) are added to the VRF table.)

Regarding claim 4, the combination of Chu and Saito teaches the method of claim 3, wherein said step of updating comprises copying all routes R<sub>m</sub> from said VRF<sub>m</sub> table into said VRF<sub>i</sub> table, whenever said VRF<sub>m</sub> table is found in said ImpRT tree (Chu, paragraph [0046], PE router determines whether to add a route to the VRF table based on its route targets.)

Regarding claim 5, the combination of Chu and Saito teaches the method of claim 4, further comprising updating said ImpRT tree to include an association between said ImpRT<sub>i</sub> attribute and said VRF<sub>i</sub> table (Chu, paragraph [0004], Route information is stored in VRF tables on the router.).

Regarding claim 6, the combination of Chu and Saito teaches the method of claim 3, wherein said step of updating comprises performing a route refresh whenever said VRFm table is not found in said ImpRT tree (Chu, paragraph [0046], Through the routing protocol, PE's advertise their routes to other PEs (i.e. route refresh).).

Regarding claim 7, the combination of Chu and Saito teaches the method of claim 4, further comprising: searching for said routes Rm in a sub-RIBm associated with said VRFm table; and copying said routes Rm from said sub-RIBm into said VRFi table based on all route target attributes configured for said VRFi table, including said added ImpRTi attribute (Chu, paragraph [0046], Routes are added to the VRF table of the PE router.)

Regarding claim 8, the combination of Chu and Saito teaches the method of claim 7, further comprising adding said routes Rm to each VRF table in a routing database available at said PE router (Chu, paragraph [0046], Routes are added to the VRF table of the PE router.)

Regarding claim 9, the combination of Chu and Saito teaches the method of claim 2, wherein said step of searching is performed through said master RIB (Chu, paragraph [0048], The PE router searches its VRF table to determine whether to add a route to the VRF table.).

Regarding claim 10, the combination of Chu and Saito teaches the method of claim 9, wherein said master RIB includes all routes in all VRF tables at said PE router and further

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includes all routes that were filtered out at said PE router using ImpRT attributes (Chu, paragraph [0004], The VRF table contains a list of all the customer sites connected to the same location (i.e. master RIB).).

Regarding claim 11, the combination of Chu and Saito teaches the method of claim 1, wherein said step of modifying comprises removing said import route target ImpRT<sub>i</sub> from said VRF<sub>i</sub> table (Chu, paragraph [0108], Sites are deleted from access modules (i.e. VRF tables). Access modules are routing tables, see paragraph [0048].).

Regarding claim 12, the combination of Chu and Saito teaches the method of claim 11, wherein said step of updating comprises parsing all routes in said VRF<sub>i</sub> table and removing all routes from said VRF table that no longer match remaining import route targets of said VRF<sub>i</sub> table (Chu, paragraph [0108], Sites are deleted from access modules (i.e. VRF tables). Access modules are routing tables, see paragraph [0048].).

Regarding claim 13, the combination of Chu and Saito teaches the method of claim 12, further comprising deleting all routes that no longer match from the sub-RIB of said VRF table (Chu, paragraph [0108], Sites are deleted from access modules (i.e. VRF tables). Access modules are routing tables, see paragraph [0048].).

Regarding claim 14, the combination of Chu and Saito teaches the method of claim 13, further comprising deleting in said master RIB every route R<sub>d</sub> that no longer matches any

ImpRT attribute in said ImpRT tree (Chu, paragraph [0108], Sites are deleted from access modules (i.e. VRF tables). Access modules are routing tables, see paragraph [0048].).

3. Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chu in view of Saito and further in view of U.S. 7,139,838 to Squire et al (hereinafter Squire).

Regarding claim 15, the combination of Chu and Saito teaches the method of claim 1, the combination of Chu and Saito does not teach further comprises maintaining at said PE router a rejected routes tree comprised of routes that were not accepted during ImpRT filtering, wherein said step of searching is also performed on said rejected routes tree.

However, Squire teaches further comprises maintaining at said PE router a rejected routes tree comprised of routes that were not accepted during the ImpRT filtering, wherein said step of searching is also performed on said rejected routes tree. (Squire, Col. 4, line 34-59, Old update messages are ignored and the record in the database corresponding to that message is used (i.e. rejected routes are used).).

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to combine maintaining at said PE router a rejected routes tree comprised of routes that were not accepted during the ImpRT filtering, wherein said step of searching is also performed on said rejected routes tree as taught by Squire with the method of the combination of Chu and Saito in order that modifications to routing information may be checked against existing data so that old or corrupt information may be ignored allowing only new information to be updated (Squire, Col. 4, line 34-59.).



Regarding claim 16, Chu teaches at a provider edge PE router, a tree data structure, stored on a computer-readable medium, comprising, for each import route target ImpRT attribute configured on said PE router (Chu, paragraph [0004-0005]), Chu does not teach a pointer to a virtual routing forwarding VRF table having said respective ImpRT attribute.

However Squire teaches a pointer to a virtual routing forwarding VRF table having said respective ImpRT attribute (Squire, Col. 4, line 55-67, Each network device maintains a database. Pointers are used in the database storing the routing information to separate information.).

Chu does not expressly disclose wherein a route refresh operation is performed only if a match between a modified ImpRT attribute and an attribute stored in the VRF table is not found, however, Saito teaches wherein a route refresh operation is performed only if a match between a modified ImpRT attribute and an attribute stored in the VRF table is not found (Saito, [0258-0269], upon receiving a registration request message, the router checks whether the address exists in the paging and routing cache to see whether there is address duplication (i.e. if a match is found). If there is no address duplication (i.e. a match is not found), the router transmits a registration acknowledgement message (i.e. performs a route refresh operation).).

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to combine wherein a route refresh operation is performed only if a match between a modified ImpRT attribute and an attribute stored in the VRF table is not found as taught by Saito with the method of Chu in order to provide routing functionality for mobile nodes such as registration and providing acknowledgement of registration (Saito, [0258-0269].).

***Response to Arguments***

4. Applicant's arguments with respect to claims 1-18 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RYAN J. JAKOVAC whose telephone number is (571)270-5003. The examiner can normally be reached on Monday through Friday, 7:30 am to 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason D. Cardone can be reached on (571) 272-3933. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/RJ/

/Jason D Cardone/  
Supervisory Patent Examiner, Art Unit 2145